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THE "OLD FORT" EARTHWORKS OF GREENUP COUNTY, KENTUCKY.

[PLATE XXXIII.]

I.—INTRODUCTION. On the southern side of the Ohio River, in Greenup County, Kentucky, at a point about a mile and a half below Portsmouth, Ohio, and nearly opposite the old mouth of the Scioto River, there is a very interesting series of ancient earthworks, worthy of more attention than it has received of late years. The position was well chosen, for from the top of the highest walls or embankments a fine view could be had of the Scioto valley for several miles, and also for a few miles each way of the Ohio valley, were it not for the timber along the latter on the margin of the river. The main work, a large quadrangular enclosure, is locally known as the "Old Fort." This enclosure, together with its so-called covered ways or parallel walls, was described and mapped two-thirds of a century ago by Caleb Atwater of Circleville, Ohio.¹ In 1846 these earthworks were re-surveyed by E. G. Squier and D. Morton, who discovered mounds and embankments not noted by their predecessor: a full account of them, with maps, will be found in the well-known work of Squier and Davis, *The Ancient Monuments of the Mississippi Valley*.

During the winter of 1885-6, I re-surveyed these imposing remains of antiquity. After a careful inspection of the ground beyond the ravine, at the end of the southwestern covered way, I became satisfied that there were earthworks, belonging to the series, not shown even in Squier's survey. This fact has induced me to prepare the present paper, and to accompany it with a diagram or outline-map of this "Old Fort" and its entire accessories, thinking that they may interest students of North American antiquities (see PLATE XXXIII).

II.—THE MAIN WORK, OR GRAND SQUARE. The main work, central enclosure, or Grand Square as it deserves to be called, is situated on a terrace some forty feet above the river bottom, the distance to the river

¹ His account appeared in the first volume of the *Transactions of the American Antiquarian Society*, published in 1820.

itself being about a quarter of a mile. In shape, it is a quadrangle with rounded corners, but instead of its sides agreeing with the cardinal points, as was first reported, it is rather the corners which look toward them. The inside area, though not level, is practically even—as even as ploughed land can be expected to be—and was probably shaped off to a reasonably perfect plane in the first place, for the convenience of the people using it: the inequalities of the ground having thus been removed the sky-line of the surrounding embankments is practically parallel with it. The top of each section of the wall, therefore, forms a straight line, excepting that portion of the N. W. wall which gradually rises from near the western gate to a point near the centre, and a slight depression in the S. W. wall near the south corner. While the N. W. and N. E. walls are, generally speaking, horizontal, the wall from the east corner and that from the west gate rise evenly to the south, where is the summit of the entire earthworks. The lowest part of the walls is at the western opening. The walls are not rounded at the top but there is a level space or walk of about eight feet in width, which can be readily traced along almost the entire length of the six embankments which constitute them.

These embankments, treated as four walls, are, in respect to their width at the base and vertical height, in mean dimensions, as follows: The N. E. wall is 60 to 65 feet wide, and 10 feet high. The S. E. wall has the same width and is 10 to 12 feet high, with the exception of a place near the southern corner, where it crosses the end of a spur of the slope of a higher plateau, which at that point overlooks the interior of the enclosure—most of that part of the slope which projected beyond the inside line of the wall was graded away and the material used in levelling the square. The S.W. wall ranges from 62 feet in width and 10 feet in height, at the south end, to 45 feet in width and 8 feet in height, at the west end. The N.W. wall is from 45 to 60 feet in width and from 8 to 10 feet in height.

There are six openings or entrances to this enclosure, the narrowest (the northern one) being 13 feet, and the widest (the N. E. one) $27\frac{1}{2}$ feet wide. The northern and southeastern entrances are not on a level with the natural surface, but are raised some two feet higher. Neither inside nor outside ditch entered into the plan of the builders here, for there are none, the walls being, generally speaking, equally elevated above the inside area and the outside natural surface, except at the narrow point described.

The larger dimensions of this Grand Square can now be given. From the centre of the S. E. to that of the N.W. opening a straight line, measured on the plan, gives a distance of 832 feet, and, between the other two openings, of 822 feet, making a mean diameter of 827 feet. The perimeter, or a continuous line traced entirely along the centre of the walls and across the openings, has a length of about 3,175 feet. The land contained within the inner lines of the embankments, but omitting any portion of the entry-ways, is about 13.20 acres in area.

Doubtless, when its architects first drew its lines on the ground, as they necessarily must have done, proper rectangles were formed, for it is even now, practically, an "exact square," as Mr. Squier called it. The following geometrical facts, deduced from plotted diagrams, will demonstrate this statement. The first diametrical line mentioned bears N. $47\frac{1}{4}^{\circ}$ W. (magnetic); the second one N. 42° E.—the two lines intersecting within three-quarters of a degree of exact right angles. The latter line intersects the first precisely at its (own) middle point, but about three feet N. W. of the middle of the former, or N. E. and S. E. dimension: were it, however, to run at right angles with it, it would cross about as far to the S. E., its termination striking within two feet of the right hand side of the N. E. opening, instead of half-way across it.

Considering the thousand years, approximately speaking, that have probably elapsed since these high embankments were raised, would it be rash to suggest that the builders of the same, of whatever tribe or race they were, had definite ideas of castramentation? Indeed, if we could see and test their original lines and should find them to be actually a degree or two out in angle, and ten or twelve feet in distance, for so large a square, we should have found blunders that could easily be paralleled in the work of more modern surveyors.

III.—THE NORTH-EASTERN COVERED WAY. The northeastern covered way extends a little over 2,000 feet from the wall of the enclosure, and its constituent embankments vary in width from 20 to 32 feet at the base, and in height from $1\frac{1}{2}$ to $3\frac{1}{2}$ feet—the narrowest parts being those on each side of the northern opening. Although, for convenience sake, occasionally called "parallel walls," here and elsewhere, like the southwestern ones, which are, for the most part, truly parallel, the walls of this covered way, at no place present any parallelism: the least distance between them, from top to top, is 176, and the greatest 320 feet. The walls intersect two ravines, both of which were undoubtedly in existence when they were built, for the embankments

follow the slopes nearly to the bottom. The ends of the walls, at both crossings, show that they have been cut away by water coming from the adjoining high land.

The length of the N. W. wall, following along its central portion, is 2,135 feet, and that of the S. W. wall 2,320 feet. The northern opening or gateway is 15 feet wide, and the distance between the embankments at the southern end is 80 feet. The included area, as bounded by the lines forming the inside bases of the walls, continued across all the openings, as in the case of the Grand Square, is 8.80 acres.

IV.—THE SOUTH-WESTERN COVERED WAY. The walls of the S. W. covered way run strictly parallel for nearly 1,100 feet, and are 191 feet apart (on centres) for that distance: the S. E. wall then makes a very slight angle to the left, or southward, but the other continues its course unchanged to the end. They are 35 feet wide at the base and from $2\frac{1}{2}$ to $3\frac{1}{2}$ feet in height. The length of the N. W. wall, both ends of which are finished, or rounded off, is 1,510 feet, and the farther end rests on the edge of the ravine, which is some 40 feet in depth and 500 feet wide, and has very steep sides. The end of the other wall has been destroyed by the falling away of the bank, leaving its present length exactly 1,190. The area, bounded by the lines forming the inside base of the walls and lines drawn between their extremities, is 4.90 acres.

V.—Before describing the outlying earthworks, the extent and dimensions of the entire "fort" with its covered ways should be ascertained. From its extreme limits on the N. E. to the end of the finished embankment on the S. W. the distance is 4,500 feet in an air line, or .85 of a mile. The entire length of all the embankments, or walls, as built, omitting original openings or vacant spaces, is a few feet over 10,200 feet, or 1.93 miles. The land included within the square, and covered by the parallel walls, together equals 26.90 acres. A fair computation of the area covered by the bases of all these walls, and of the cubical contents of the embankments raised on them—including the "traces" and the spur crossed—according to the data furnished by this survey, gives as follows:

For the grand square,	4 acres, 29,400 cubic yards.
" northeastern parallel walls,	3 "	6,700 " "
" southwestern " "	2 "	5,900 " "
<hr/>		
Total,	9 acres, 42,000 cubic yards.

VI.—OUTLYING WORKS OF THE GRAND SQUARE. Just west of and near to the northern corner of the large enclosure, there are two small burial-mounds, one of which is 42 feet in diameter and $2\frac{1}{2}$ feet in height, and the other 45 feet in diameter and 3 feet in height.

Also about 650 feet to the northward of the northern entrance of the square, and on the edge of the same plateau on which the main work is built, there is a small elliptical enclosure. The oblong mound within it is 60 by 128 feet at the base and 4 feet high. The embankment ranges from 30 to 80 feet in width and from 1 to 5 feet in height. The ditch, which is between the mound and the embankment, leaving no berme, has an average depth of 15 inches, and is twenty-four feet wide. At the east end of the enclosure there is a narrow causeway, 6 feet wide, which crosses the ditch.

VII.—WORKS BEYOND THE S. W. RAVINE. We now turn again to the S. W., and, crossing the ravine beyond the covered way, there find other earthworks which are different in shape and arrangement from those just described, and some of which are the works referred to in the beginning of this paper as not having been noted by previous explorers.

First, there is part of a circular enclosure, apparently 230 feet in diameter.² This would imply a circumference of 723 feet, were the enclosure complete, but, unfortunately, only about one-third of it remains. This fragment is 35 feet in width and 4 feet in height, with a gateway or opening of 8 feet on the S. W. side. At a point less than 40 feet after passing through the entrance, one comes to the snout of an animal-shaped mound, which, fortunately, has not been touched by the encroaching ravine immediately back of it. This "effigy" probably represents a bear, which seems to be leaning forward in an attitude of observation. It is not very large, being but 53 feet from the top of the back to the end of the fore-leg, and its utmost length is $105\frac{1}{2}$ feet from the tip of the nose to the rear of the hind-foot. The greatest vertical height is at the fore-shoulder, where it is $3\frac{1}{2}$ feet.

East of and near the entrance to the ruined enclosure just described, there is a low embankment, 32 feet wide and $1\frac{1}{2}$ feet high, which runs 348 feet in a nearly S. W. direction.

To the east of the southern end of this last embankment lies a small enclosure. The wall is 15 feet wide, 1 foot high, and 92 feet from

² The three fixed survey points on the centre of the bank or wall form points on an arc of a circle having a radius of 115 feet.

centre to centre of embankment, but there is no opening in it. Within is a small mound 32 feet in diameter and 2 feet high. This enclosure is probably the small two-feet-high circle mentioned by Mr. Squier.

Nearly south from the animal-mound enclosure there is another circle, 130 feet in diameter from centre to centre of the embankment, which is 32 ft. wide and $1\frac{1}{2}$ ft. high. On the inside there is a ditch 21 ft. wide and 1 ft. deep. The opening in the wall, which is to the eastward, and the causeway over the ditch are both 22 ft. wide. This enclosure, like the preceding one, has a mound inside, but it is situated back of the centre from the opening, and is 35 ft. in diameter and 1 ft. high.

Beyond these enclosures, to the S. W., are a number of ordinary burial-mounds, and traces of some straight embankments that have been cultivated for many years, which I did not survey by reason of bad weather. They undoubtedly belong to this series of works. There are also some stone-mounds, on the spurs of the adjacent bluffs, to the south and southwest.

The above facts were taken from the field-book of a sufficiently close survey, in which 86 bearings were taken and horizontal distances measured, aggregate in all 10,485 feet, or nearly two miles (without including the nearly as many diameters and the offsets for topography), and in which, also, levels for vertical dimensions were taken at 80 separate points.

The site, though by no means as the mound-builders left it, is almost perfect when compared with the remains at Newark, Ohio, and other places. The surface inside the main enclosure and a portion of the N. W. wall, together with both covered ways and the other enclosures and mounds, have either been cultivated or are under cultivation—the first-mentioned, for many years. The S. W. wall is still covered with large trees. Up to the time of the partial destruction of the N. W. wall last year, the embankments of the "fort" had scarcely been disturbed, and were in good condition, their height having been their greatest protection. While the covered ways may have been somewhat higher, they never had the height represented by earlier explorers, for in places the wall has, apparently, never been disturbed, and at such points the height does not exceed $3\frac{1}{2}$ feet: nor do I think that the two isolated mounds were ever as high as six feet each. Under these circumstances, then, it was possible for a judicious surveyor to make a reasonably accurate survey of the "Old Fort" and its surroundings, at this late date, without drawing on his fancy.

Since I made this survey, the Maysville and Big Sandy railroad has been graded between these earthworks and the river, but so close to the former that the N.W. wall is badly injured in its entire length.

Within and around these earthworks, on all the plateaus, in every direction, there are abundant evidences of a former occupancy, especially on the N. and N.W. sides, where the village *débris* is the most abundant. This consists of broken pottery, stone and chipped implements, broken sea and fresh-water shells, disks, ornaments, and, in fact, nearly everything that is usually found on ancient village sites. Near the southern corner of the "fort" itself will be noticed, on the plan, a limited elevation or ridge. Mr. Atwater describes this as "a large elevated mound," and thinks it "to have been designed for uses similar to the elevated squares at Marietta;" but in his description of the Marietta works he does not state what those uses were. Mr. Squier also refers to it, but not so positively: he calls it "a bastion, probably natural, but adapted by art, which commands the hollow way or ditch" on the southeastern side, which "ditch" seemed to him also artificial, or, "at any rate it has been modified by art." There is, however, no doubt that this point is wholly natural, for it is simply a spur of a higher terrace, only modified by the building of the wall across it, and by the grading off of its end where it projected inside the latter. Nor is the ditch anything more than the depression where the natural slope and the artificially placed earth come together.

There is no other statement in Mr. Atwater's account tending to mislead or puzzle the modern investigator, but Squier found "on the S.W. side a sort of run-way resembling a ditch, which loses itself in a deep gully towards the river. It is undoubtedly wholly or in part artificial." Now this "ditch," deepening into a ravine as it extends northwestward, is no more artificial than the other: it is undoubtedly natural, though it afforded a good passage-way to and from the bottoms below.

Mr. Squier also states that "a light wall of some hundred paces in extent runs from the left hand entrance of the main work along the verge of a declivity terminating at the western angle," and he delineates it on his map. There is no artificial wall such as he describes, nor even any natural bank other than the edge of the ravine and terrace. Of the three mounds he describes I could find but two.

It is almost impossible to tell why these elaborate earthworks were erected. In a few matters the explanation is obvious, but in the majority of points every reason advanced would be mere hypothesis. Let us take the main enclosure for example. By placing palisades on the wall

near the south angle, where it intersects the spur, and closing the openings, it would certainly serve as a fort, and could be defended against any weapon that may have been in use at the time the works were built. The absence of ditches or trenches in connection with the fort and its parallel walls may, in some eyes, militate against the theory that the works were erected with a view to warlike operations, but that is not conclusive as regards the old mound-builders, for we are totally ignorant of their method of waging war.

The unattached smaller enclosures were probably for burial purposes, the mounds in the two circular ones being of the same form as ordinary tumuli. In several instances where such mounds have been opened, they have been found to contain human bones. Sometimes these were calcined, and in such cases ornaments, pipes, *etc.* were found with them.

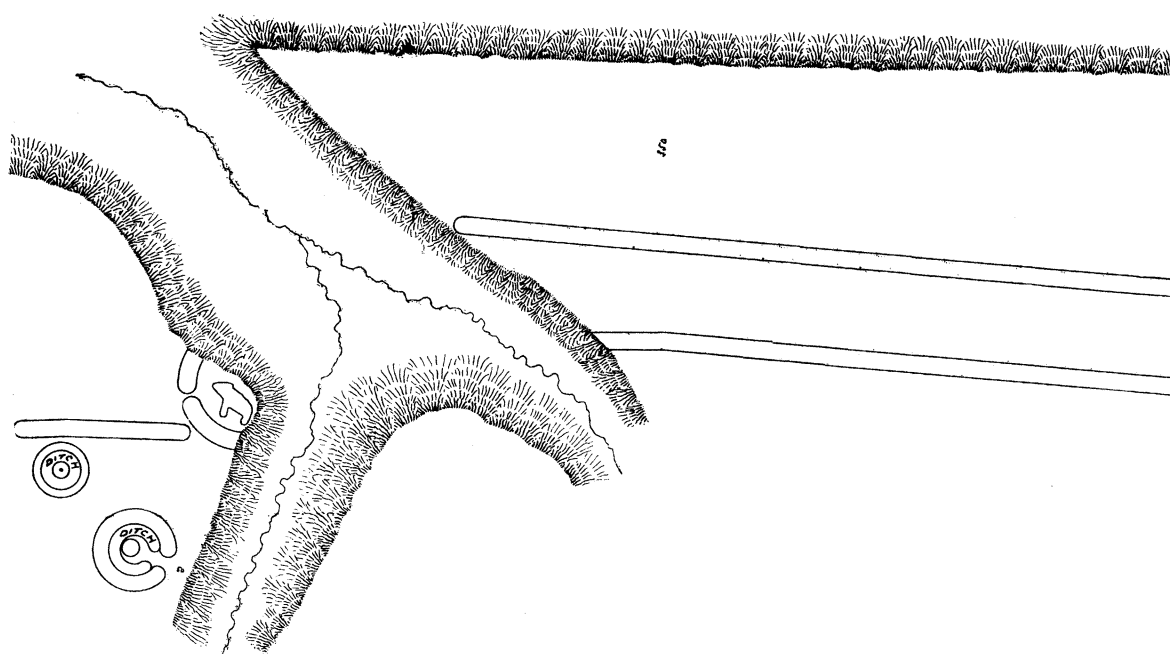
The "bear" effigy-mound described here has never been mentioned in print before, and seems to have hitherto escaped the notice of enquiring scientists—indeed, it was unknown even to the residents of the neighborhood. Its value is, mainly, in that it is the first imitative mound constructed of earth discovered south of the Ohio River, and that it is an important addition to the scanty list of such works already brought to light in Ohio, the nearest of which is but a few miles away from this one, being the peculiar three-legged animal (in profile) on the Scioto River, just above Portsmouth, surveyed by Col. Whittlesey in 1846 and mapped in the *Ancient Monuments*.

Though not brought to public notice, to my knowledge, prior to 1791,³ this "old fort" was probably known to white men nearly a century earlier. The walls of its central enclosure have yielded, from the time of the earliest American settlements to last year's railroad-grading, all sorts of relics of European origin. Gun-barrels, buckles, crosses, coins, *etc.*, taken thence have found their way into the hands of the curious.

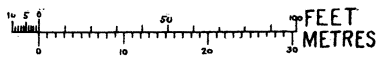
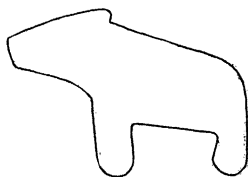
T. H. LEWIS.

*St. Paul, Minn.,
Sept. 30, 1887.*

³ By Major Jonathan Heart, stationed at Fort Harmar, who, in a letter to Dr. B. S. Barton, of Philadelphia, dated January 5, 1791, speaks of such ancient remains as being found "along the Scioto to its junction with the Ohio, opposite which, on the Virginia side, are extensive works, which have been accurately traced by Colonel George Morgan; and I have been told that there are remains of chimnies, &c." See Vol. 3 of the *Trans. of the Amer. Philosophical Society*.



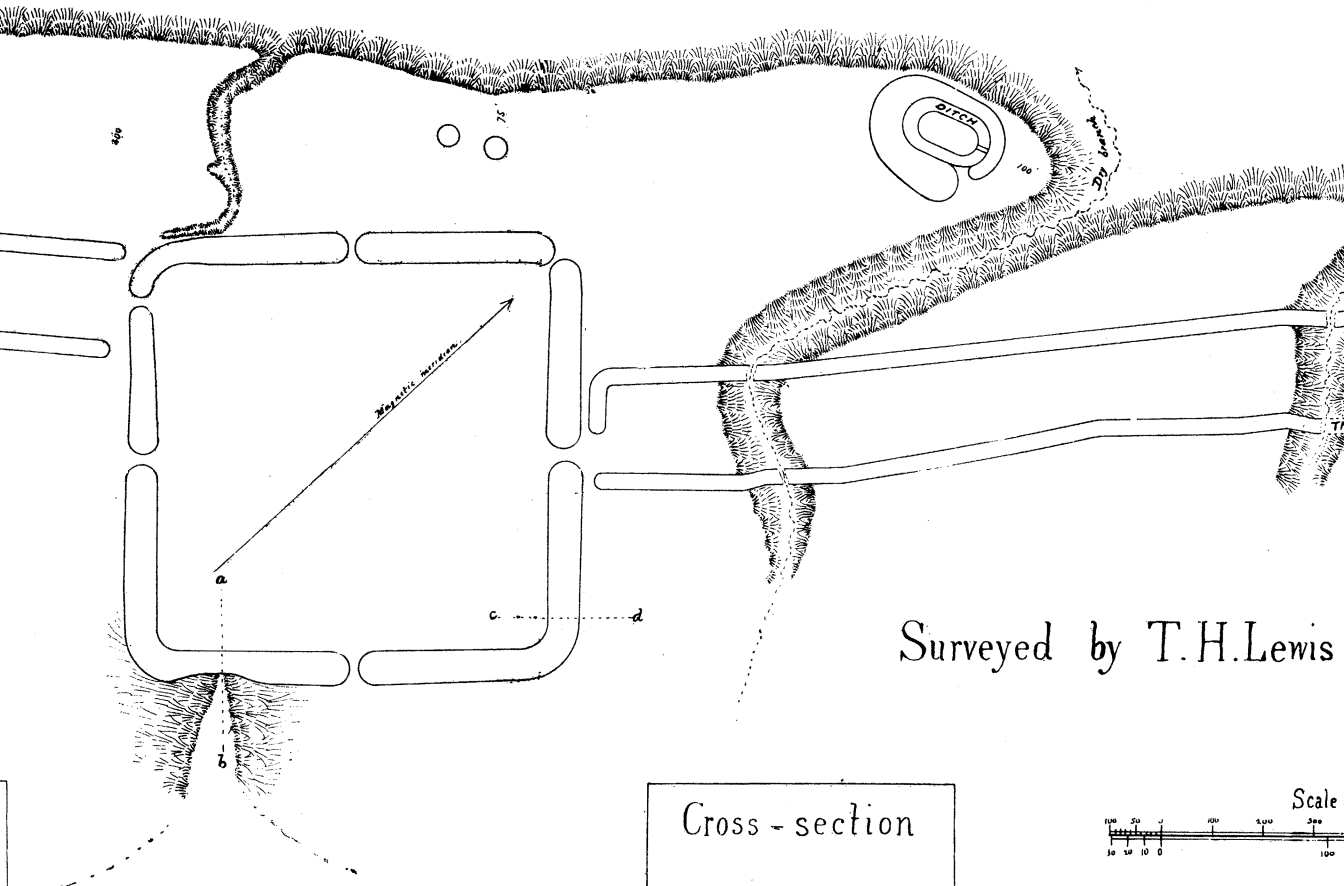
ENLARGED PLAN OF EFFIGY.



Cross - section

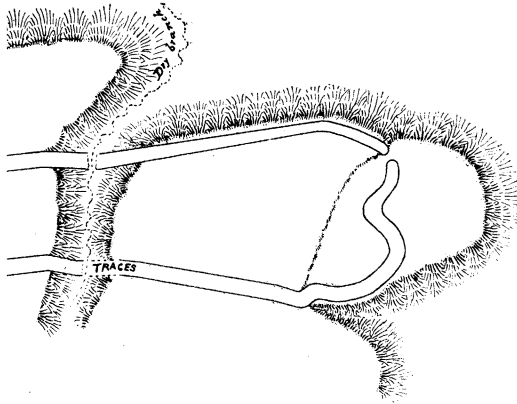


THE "OLD FO" IN GREENUP

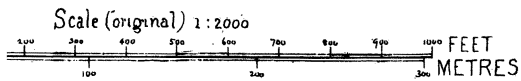


Surveyed by T.H.Lewis

FORT " &c. UP CO KY.



Lewis , March 485 , 1886.



Drawn by A. J. Hill.